

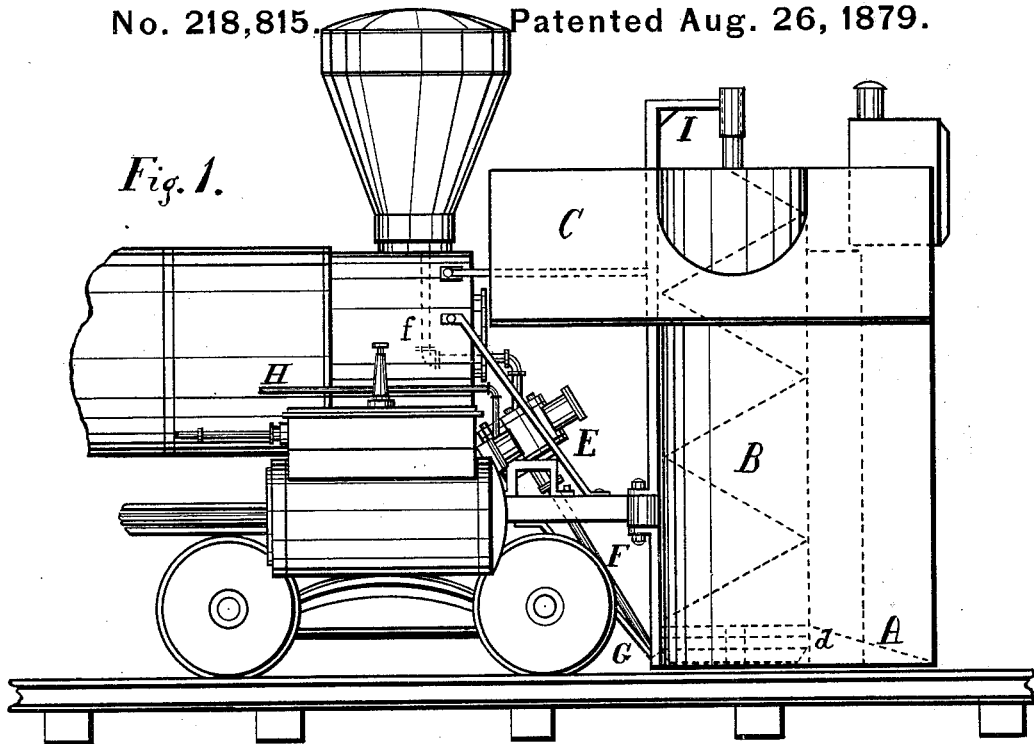
DeW. HAWLEY.

Snow-Plow.

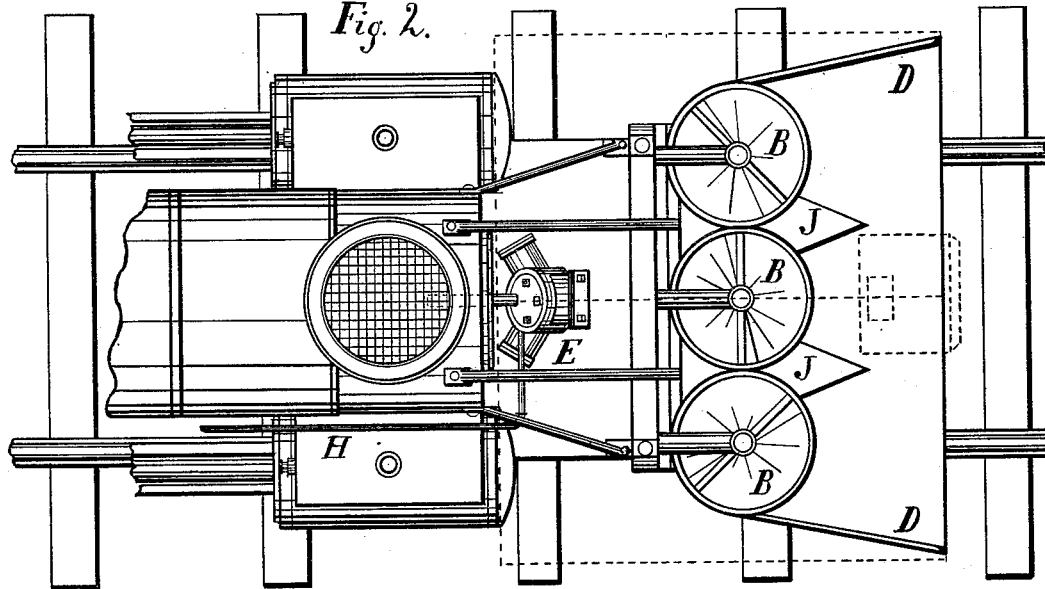
No. 218,815.

Patented Aug. 26, 1879.

*Fig. 1.*



*Fig. 2.*



WITNESSES

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*A. R. Selden*

INVENTOR

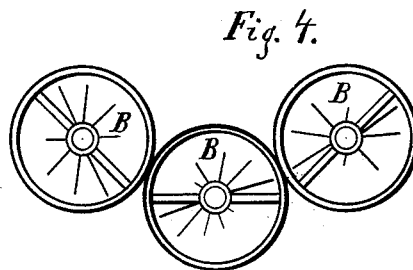
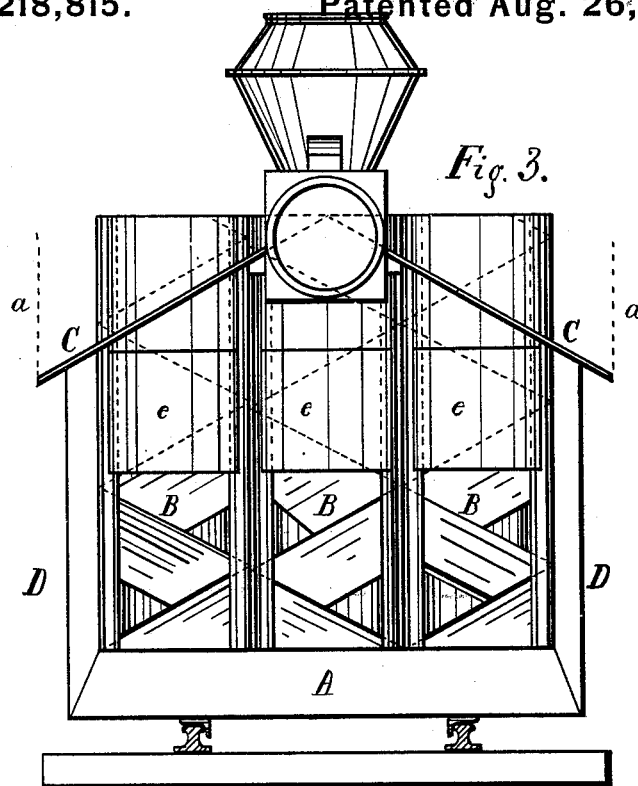
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# UNITED STATES PATENT OFFICE.

DE WITT HAWLEY, OF ROCHESTER, NEW YORK.

## IMPROVEMENT IN SNOW-PLOWS.

Specification forming part of Letters Patent No. **218,815**, dated August 26, 1879; application filed February 1, 1879.

### *To all whom it may concern:*

Be it known that I, DE WITT HAWLEY, of Rochester, Monroe county, New York, have invented certain Improvements in Railroad Snow-Plows, of which the following is a specification, reference being had to the annexed drawings.

The object of my invention is a snow-plow for use on railroads, for the purpose of removing snow from the rails and delivering it at the side of the track, or in any other convenient locality.

In snow-plows as heretofore generally in use on railroads, the snow has been elevated by inclined planes and turned sidewise off of the track by curved mold-boards or similar devices. In this system the snow was necessarily elevated the whole distance necessary to throw it clear of the track by the inclined planes, and where the snow was very deep or badly drifted the motive power was frequently insufficient to elevate and discharge the required amount of snow and to force the plow through the drift, or the resistance of the snow was so great as to throw the plow from the rails.

In my invention the snow is elevated but slightly by the inclined plane, and the subsequent elevation of the snow necessary to throw it clear of the track is effected by a screw-conveyer or series of conveyers, arranged vertically, or nearly so, driven by power obtained from the boiler of the locomotive, and which operate to raise the snow through pipes and deliver it onto the upper side of a suitable roof or inclined plane, down which it slides to the side of the track.

A small engine arranged in any convenient way beyond the conveyers, and receiving steam or compressed air from the locomotive, communicates power to the conveyers. The motion of the conveyers is thus made entirely independent of the forward motion of the locomotive, is placed under the control of the engineer, and may be most rapid when the locomotive is moving forward slowly.

The roof on which the snow is deposited may be provided with side boards or guards to retain the snow on it, if desired.

My invention may be used either in place of the ordinary snow-plow attached directly

to the pilot of the locomotive, or it may be applied to a special car constructed for the purpose.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved snow-plow as applied directly to a locomotive; and Fig. 2 is a plan view of the same, the roof being removed. Fig. 3 is a front view, and Fig. 4 represents a modified arrangement of the conveyers.

My invention consists in the combination of an inclined plane placed in front of the plow, for raising the snow from the track, and a vertical screw conveyer or conveyers arranged to receive the snow from the inclined plane and elevate it through a pipe or pipes, so that it may be delivered to the side of the track.

My invention also consists in the combination of the inclined plane and conveyers with a slanting roof or guide for the snow, so as to effect its delivery away from the track at one side thereof.

My invention also consists in the application of suitable side boards to the inclined roof, for the purpose of retaining the snow on the roof for carriage to any convenient point of delivery.

My invention also consists in the combination of the inclined plane aforesaid, the conveyers and apparatus for delivering the snow at the side of the track, and an engine for operating the conveyers driven by compressed air or steam supplied by the locomotive which propels the plow.

My invention also consists in the combination of the inclined plane, conveyers, delivering apparatus, and engine, when the whole is so constructed and arranged as to be readily connected to or removed from the pilot of a locomotive.

My invention also consists in various details of construction, as hereinafter more fully set forth.

In the accompanying drawings, A is the inclined plane for elevating the snow to the bottom of the conveyers; B, the conveyer or conveyers, and C the roof for delivering the snow to the side of the track. Suitable sides or wings D D on each side of the inclined plane A, and standing slightly inward, gather the

snow and force it toward the lower ends of the screw-conveyers.

E is an engine of any simple and compact form, placed on the pilot of the locomotive, and driving the screw-conveyers by means of the inclined shaft F and bevels G at the lower end of the same. In case more than one conveyer is used they will be connected together by gearing d, Fig. 1.

I have shown in the drawings an engine of the three-cylinder form; but any other kind of engine may be used.

The engine receives steam from the boiler of the locomotive through a pipe, H, which is provided with a throttle-valve under the control of the engineer; or the engine may be driven by compressed air obtained from an air-pump on the locomotive. The motion of the conveyers may thus be stopped or varied by the engineer, as may be necessary.

The exhaust from the engine may be delivered into the locomotive smoke-stack by means of the pipe f, Fig. 1.

The engine is supported on a suitable framework on the pilot, and may be jacketed to prevent condensation of the steam from contact with snow.

The screw-conveyers revolve within suitable pipes or casings, which are closed except at the lower end on the forward side, where they are open to receive the snow forced up the inclined plane A.

The screw-conveyers are provided with suitable journals at their upper and lower ends. The journal I at the upper end is placed above the top of the pipe or casing in order to permit a free discharge of the snow.

The upper end of the pipe or casing in which the conveyers revolve is arranged to deliver the snow forced upward through it onto the inclined roof C, down which it slides to the sides of the track.

The openings into the screw-conveyers at their lower ends are arranged to be varied in height by means of the vertically-adjustable doors e e e, Fig. 3. These doors are arranged so as to be raised or lowered by means of racks and gears, the latter being attached to a rod reaching back to the cab of the engine, for the purpose of enabling the engineer to adjust their position.

While my improved snow-plow, if built sufficiently high, would necessarily in a measure obstruct the view of the track, it must be remembered that it is not designed to be used while running at high speeds, and that the right-hand wing D may be cut away for the purpose of enabling the engineer to see the track, or that when the plow is not in use doors may be opened through the right-hand conveyer-casing for the same purpose.

The casings or pipes in which the screw conveyers or elevators operate are braced to the front of the locomotive in any suitable manner.

By placing the gearing at the top of the conveyers the height of the inclined plane A

will be still further diminished, and the resistance to the forward motion of the locomotive correspondingly lessened.

The number of the conveyers is not material, the essential point being that they should collectively have capacity sufficient to remove the snow which is pushed up the inclined plane toward them.

Provision may be made for blowing hot air or steam into the conveyers through suitable pipes, for the purpose of keeping them free from snow.

Any suitable devices for breaking up or loosening the snow in front of the conveyers may be used in connection with my invention.

By extending the roof C the snow may be delivered at any suitable distance from the track, on one or both sides, according to the inclination of the roof, which may be so constructed as to be inclined in either direction.

Side boards, a a, Fig. 3, are attached to the edges of the inclined roof C, to be used to retain the snow for delivery in any convenient locality. This arrangement is especially advantageous when my improved snow-plow is constructed on a special car having a large carrying capacity. The degree of the inclination of the roof C is not material, as, if the conveyers reach a sufficient distance above the roof, the snow will readily slide down to the side of the track.

A modified arrangement of the conveyers is shown in Fig. 4, in which one of the conveyers is placed in front of the other two.

In case the conveyers are placed in the same straight line across the track, suitable dividing-wedges J J, Fig. 2, should be placed between them to guide the snow into the openings in the conveyer-casings.

In the accompanying drawings I have represented my improved snow-plow as constructed so as to be readily attached to or removed from the pilot of a locomotive, the whole device, except the engine, being removable at the same time.

I claim—

1. The combination of the inclined plane A and the vertical screw conveyer or conveyers B, provided with suitable casings, open at top and bottom, and having their lower ends located in the rear of the inclined plane, substantially as set forth.
2. The combination of the inclined plane A, the vertical conveyer or conveyers B, and the inclined roof C, substantially as described.
3. The combination of the inclined plane A, wings D D, vertical conveyer or conveyers B, and the inclined roof C, substantially as set forth.
4. The combination of the inclined plane A, conveyer or conveyers B, roof C, engine E, and suitable connecting mechanism, substantially as and for the purposes set forth.
5. The combination of the inclined plane A, conveyer or conveyers B, and roof C, provided with suitable side boards, a a, substantially as described.

6. The combination of the inclined plane A, conveyers B, roof C, and engine E, supplied with steam from the boiler of the locomotive, under the control of the engineer, substantially as described.

7. A railroad snow-plow consisting of the following instrumentalities: an inclined plane, one or more conveyers, an inclined roof, and an

engine, the whole being so constructed and arranged as to be applied to the pilot of a locomotive, substantially as set forth.

DE WITT HAWLEY.

Witnesses:

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BENJAMIN SMITH.